1974). In 1970 there were 96 pesticides commercially available that had heavy metal bases including Li, Cr, Pb, Cd, Zn, Se, Cu, F, and I. The National Academy of Science concluded that "knowledge of toxicity levels at relatively low-level long-term dosages for many of these pesticides are completely lacking. Furthermore, the ultimate depository in nature for many of these elements is at present unknown."

Based on limited available data, Gale and Adams (1984) concluded that peat mining activity in North Carolina and subsequent land use changes will significantly increase effluxes of trace metals. Various peat mining EIS studies have demonstrated mercury concentrations are consistently high in examined sediments (0.01 to 1.0 ppm) from drainage canals and the Pungo River. Nine percent of 368 water samples obtained with the Ambient Water Monitoring Program (AWMP) within the Washington regional office of NRCD from 1979 through 1981 contained detectable mercury (DEM, 1983). However, "at this point in time, little information exists to address the critical question of the impacts of such increases in drainage waters on biota of the receiving estuarine systems" (Gale and Adams, 1984). They believe that determining the potential for impacts is a critical research need and "if impacts do occur, they are not likely to be the result of a single material, such as mercury or Alachlor, but rather the result of the cumulative effects of a variety of trace metals, pesticides, and other substances." The banks of North Carolina's estuaries contain other major industrial plants such as pulp and paper mills, metal plating operations, textile mills and synthetic fiber plants with large, and potentially heavy metal-rich wastewater discharges. In addition, there are numerous smaller industrial operations with potential localized or cumulative impacts resulting from point source discharges.

A totally unknown contributor, and potentially one of the most important, are the many historic waste disposal sites and industrial sites scattered through the marshes and lowlands within the estuarine area. Both the locations and the chemicals dispensed into these waste facilities and dump sites are very poorly known. Since these facilities generally predate the time of environmental awareness, their past and present potential impact upon the estuarine system is also very poorly known, but it could be overwhelmingly significant.

Point and Nonpoint Source Discharges

The Division of Environmental Management's (DEM) Focus database contains information on location, size and discharge characteristics of all permitted National Pollution Discharge Elimination Standard (NPDES) discharge facilities in the Tar-Pamlico River drainage basin. Each permitted industrial and municipal discharge is plotted on maps of the lower Tar River and the Pamlico River and listed in decreasing order of design flow in Appendix 1.

As of this writing, there are 133 permitted non-municipal and 30 permitted municipal discharges within the entire Tar-Pamlico drainage basin. These represent a design flow of 74.3432 and 44.953 million gallons per day, respectively and are listed by decreasing discharge volume in Appendix I.3. Note that only a very few of the permitted discharges are required to monitor parameters of metels or organic compounds. This is the sole source for limited information that does exist from monitoring data gathered to fulfill individual permit requirements about the chemical content of effluent from specific discharges.

Little is known about nonpoint source discharges into the Tar-Pamlico River drainage systems. Sources of nonpoint discharges are extremely varied